Guidance on Collecting Commute Data

Massachusetts Rideshare Program

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I. Overview

Introduction

The collection of accurate and comprehensive data on the commute trips of *applicable commuters*[1] is essential to the success of your facility's commuting options program.

Accurate data will help you establish an accurate 25% drive-alone trip reduction goal as well as identify the applicable commuters to whom you can direct your trip reduction incentives. Accurate data will also help you track the progress you've made in achieving drive-alone trip reductions because you'll be able to compare what commute modes your commuters take from year to year.

To obtain the data, MassDEP requires that employers follow the series of steps outlined in the section, *Required Commute Data Collection Steps,* of this guidance. MassDEP also offers your facility three methods to choose from to obtain commute data: Census Survey method, Random Sample Survey method and Direct Count method.

The Rideshare regulation at 310 CMR 7.16(4) and (5) requires your facility to provide data on the commute trips of all its applicable commuters. Below is a brief summary of the three available commute data collection methods. This guidance document also addresses the steps that need to be taken to gather commute data from your applicable commuters.

1 *Census Survey Method*

In the Census Survey method, your facility would collect commute data on its commuters by surveying *all* applicable commuters regarding how they commute to work. For this method, your facility may e-mail or distribute surveys directly to applicable commuters. Your facility may also survey commuters in person or by telephone.

2 *Random Sample Survey Method*

In the Random Sample Survey method, your facility would collect commute data by contacting a limited number of applicable commuters (the "commuter sample") that are randomly selected to represent all applicable commuters (the "population") at the facility. The key concept in the Random Sample Survey method is that applicable commuters are randomly selected for surveying. This allows your facility to make assumptions, based on standard statistical sampling concepts, about the commute habits of your entire applicable commuter population.

[1] "*Applicable commuters"* refers to *employees* at the facility who work at least 17 hours per week for 20 or more weeks per year; are scheduled to begin and complete their workday between 6 a.m. and 8 p.m.; and, use their vehicle during work hours for work purposes less than five times a month. For educational facilities, "*applicable commuters"* refers to *employees* and *students.* Applicable students are full-time commuting students; are scheduled to begin and complete their classes between 6 a.m. and 8 p.m.; and use their vehicles for school purposes or other related matters less than five times a month.

Once the data on the commuter sample are collected, your facility would extrapolate the commute data from the sample to the entire applicable commuter population using the *Summary of Commute Data* form.

In this method, your facility would distribute surveys *only* to the commuters in the sample. The surveys could be distributed directly to commuters or by e-mail. Your facility may also survey commuters in the sample by telephone or in person.

3 *Direct Count Method*

In the Direct Count method, employers use observation and analysis to identify the commute trips taken by applicable commuters. Employers also examine transportation records, such as sales of transit and rail passes, the number of vehicles in parking lot(s), and use other ways of obtaining the data.

As is required with the Census Survey and Random Sample Survey methods, employers must obtain commute trip data for each applicable commuter at the facility for all five days of the facility's regular operating schedule (or more, if the operations extend to six or seven days).

It is important that you choose the commute data collection method that is suitable for your facility and which will result in the most complete commute data. The chart, *A Comparison of the Commute Data Collection Methods*, in this guidance, points out the advantages and disadvantages of each method. It also identifies employers that would most likely benefit from the various methods.

II. Required Commute Data Collection Steps

Regardless of the method you use to collect commute data, your facility must:

1 Identify Applicable Commuters

Your facility must first identify the applicable commuters from whom you must collect data. The number of applicable commuters from whom you must collect data will depend on the commute data collection method you use:

If your facility uses the…	Collect data on…
Census Survey or Direct Count Method	All applicable commuters.
Random Sample Survey Method	A sample of applicable commuters that are randomly selected from the total number of applicable commuters.

Some employers gather their personnel records together to determine applicable commuters. If you are conducting a census or random sample survey you can also use the *Employee Commute Survey*[1] to identify your applicable commuters (an applicable commuter would be anyone that checks all three boxes in Section B of the survey). If you are conducting a direct count and your facility has no other way of determining applicable commuter numbers, estimate the number of applicable commuters by using the highest number of commuters counted on one day of your target workweek .

2 Choose a Commute Data Collection Week & Method

Your facility must collect commute data on its applicable commuters on a daily basis over a one-week period during the facility's regular operating schedule. For many employers this is a five-day period; others may have a six- or seven-day schedule.

If your facility uses the Census Survey or Random Sample Survey method you may collect the commute data by one of the ways listed below:

- **Timed-Back Data Collection Approach**. Your facility may collect the data *after* the end of the commute data collection week. For example, if the commute data collection week is Monday, November 6, through Friday, November 10, your facility would distribute the survey on the following Monday and ask commuters how they commuted to work during the previous week. The advantage of this approach is that commuters provide the data all at once.

[1] For educational facilities, use both the *Employee Commute Survey* and the *Student Commute Survey* forms.

- **Ongoing Data Collection Approach**. Your facility may collect data *at the start of* the commute data collection week. For example, your facility may ask applicable commuters to fill out their survey each day they come to work. The advantage of this approach is that commuters may be more accurate in recording how they commute to the facility than with the timed-back data collection approach where commuters are asked to remember what they did the week before. The disadvantage is that commuters may forget to fill out the survey every day of the week as the week progresses.

If your facility uses the Direct Count method, use the "ongoing data collection approach" method.

3 Collect the Commute Data from Your Applicable Commuters

The procedure for collecting data varies according to the data collection method your facility uses. However, in all three methods, your efforts will be more successful if you develop a strategy to collect the data. Below, is a brief summary of the strategic steps for collecting data for each method:

In general, facilities have obtained data on a fairly high number of applicable commuters (75% or greater) by **establishing a team or designating a coordinator** to collect the data from commuters.

- The Census Survey method consists of three steps: notification of applicable commuters about the upcoming survey through posters, e-mails and other marketing activities, and the distribution and collection of the survey. This method also includes following-up with applicable commuters who do not respond to obtain additional responses.

- The Random Sample Survey method consists of notification of the randomly selected sample of applicable commuters, and the distribution and collection of the survey. This method also includes following-up with applicable commuters who do not respond to obtain additional responses.

- The Direct Count method involves counting applicable commuter vehicles as they enter parking lots between the hours of 6 a.m. to 8 p.m. and looking at transportation records held by the facility.

See the individual sections on the three methods for details on how you can obtain comprehensive applicable commuter commute data.

4 Obtain *Comprehensive* Commute Data

Keep a Record of your Respondents

Make sure you track whom you have data on and whom you don't. By a process of deduction, this will allow you to follow up on non-respondents.

MassDEP recognizes that employers often cannot obtain commute data from all their applicable commuters, or from the entire applicable commuter sample if you are using the Random Sample Survey method. When data cannot be collected on certain commuters, most facilities must still account for those applicable commuters for whom they do not have commute data, i.e. "non-respondents," as indicated in Table 1:

Table 1. Options for Accounting for Non-Respondents.

If your facility used the …	And you obtained this percent of data from your applicable commuters…		You count non-responders as…
Census Survey or Direct Count Method	≥ 90% of your applicable commuters		No action required.
	≥ 75% but < 90% of your applicable commuters		Commuting in the same proportion of modes as responding commuters.
	≥ 50% but < 75% and	1. your facility opts to implement one additional trip reduction incentive in addition to the incentives already implemented.	Commuting in the same proportion of modes as responding commuters.
		2. your facility opts ***NOT*** to implement an additional trip reduction incentive.	Generating drive-alone trips.
Random Sample Survey Method	All applicable commuters in your sample		No action required.
	≥ 90% of the applicable commuters in your sample		Generating drive-alone trips.

Please note the following:

- If your facility used the Direct Count and Census Survey methods and achieved less than a 50% response rate or used the Random Sample Survey method and achieved less than a 90% response rate, you must follow up on applicable commuter non-respondents to achieve the minimum response rates. If your facility submits a Base or Update Report without the minimum response rate, it is likely that your facility will be required to re-survey and resubmit the report.

- If you used the Census Survey or Direct Count method, and obtained data from over 50% but less than 75% of its applicable commuters, your facility may choose how it wants to address its non-respondents. Your facility may either:

  1) implement an additional trip reduction incentive and count its non-respondents as commuting in the same proportion of modes as respondents, or

  2) *not* implement an additional trip reduction incentive and count its non-respondents as generating drive-alone commute trips.

  If you choose to implement an additional trip reduction incentive, the incentive must be in addition to the incentives that you have already implemented. See the List of Additional Trip Reduction Incentives*, for a list of bicycling incentives, work schedules and other incentives that your facility may opt to put into place.*

- Please be aware that counting your non-respondents as generating drive-alone trips increases the number of trip reductions you will need in order to meet the 25% drive-alone commute trip reduction goal.

5 Complete Your *Summary of Commute Data Form*

Once your facility has collected its data, including follow-up with non-respondents, you must complete and submit your *Summary of Commute Data* (SCD) *Form* to MassDEP. There are four forms to choose from, depending on your response rate and how you want to account for non-respondents.

Table 2. *Summary of Commute Data Forms*.

If you used the …	**And you obtained commute data from…**		**Then complete…**
Census Survey or Direct Count Method	≥ 90% of your applicable commuters		SCD Form 1
	≥ 75% but < 90% of your applicable commuters		SCD Form 2
	≥ 50% but < 75% of your applicable commuters and	1. your facility opts to implement one additional trip reduction incentive (in addition to those incentives required by 310 CMR 7.16(1))	SCD Form 2
		2. your facility opts ***NOT*** to implement an additional trip reduction incentive	SCD Form 3
Random Sample Survey Method	All applicable commuters in your sample		SCD Form 4
	≥ 90% of the applicable commuters in your sample		SCD Form 4

III. The Commute Data Collection Methods

Census Survey Method

Your facility must survey only applicable commuters in the Census Survey method. If you survey all commuters, only report the responses from applicable commuters.

In addition to the steps discussed in the *Required Commute Data Collection Steps,* it is recommended that your facility takes the following two steps when conducting a census survey:

1 *Select a Survey Form*

Your facility may use the *Employee Commute Survey*[1] form in the Rideshare Program package or develop its own survey form. If your facility chooses to develop its own form, it *must* include the questions regarding commute trips that are on the Rideshare Program's survey form (Section A). Submit a copy of your survey form with your facility's Base Report or Update Report. These questions are designed to provide the information required in the Base Report and annual Update Reports. Your facility is welcome to retype the MassDEP survey form onto your own letterhead.

See *Additional Commute Survey Questions* in the Appendix of this document for more details.

MassDEP encourages you to ask additional questions on the surveys in order to gain more information for implementing your required trip reduction incentives. For example, asking commuters what time they arrive and leave may help your facility match its commuters together to form carpools and vanpools.

It is also a good idea to pre-test these questions on a small group of your applicable commuters to ensure that they will understand them.

2 *Develop a Strategy to Achieve a High Response Rate*

A high response rate ensures that your commute data are an accurate reflection of what commute modes your commuters take to work. To achieve a high response rate, MassDEP recommends that your facility develop a comprehensive plan to collect its survey data. This plan should include ways to notify your commuters about the survey, a process to distribute the survey to all applicable commuters, and a method for collecting the survey.

[1] For educational facilities, use both the *Employee Commute Survey* and the *Student Commute Survey* forms.

The following is a brief description of each aspect of a comprehensive data collection plan.

Notification: Your facility will increase its chances of obtaining a high response rate if you inform commuters about the survey as much as possible before distributing it. Your facility may want to:

- ❑ Send e-mails or flyers, or post notices about the upcoming commute survey.
- ❑ Highlight the distribution of the rideshare survey in the facility's monthly newsletter.
- ❑ Send a letter from the president, chief executive officer or other high-ranking official about the importance of completing the survey.

Distribution: Because your facility may employ several hundred commuters, it is important to have a clear strategy to distribute the survey. Anecdotal evidence shows that employers that obtain high response rates (75% or greater) use a series of coordinators or develop teams to distribute the survey. Your facility may also want to:

- ❑ Distribute the survey by e-mail.
- ❑ Distribute the survey at meetings.
- ❑ Distribute the survey through supervisors, managerial staff, or department coordinators.
- ❑ Distribute the survey with paychecks or other notices.
- ❑ Distribute the survey at rideshare information tables or at rideshare promotional events.

It is a good idea to personalize the survey with a cover letter. Also, your facility may receive a higher survey response if you assure commuters that their names and survey information will be kept confidential. However, make sure you know the names of the commuters that received and returned the survey so that you can conduct follow-up with those who do not respond.

Collection: Most likely, the strategy to collect the surveys will resemble the strategy to distribute the surveys. For example, if your facility used coordinators or teams to distribute the surveys you may want to use them to collect the surveys. You may also want to:

- ❑ Collect the survey directly, through e-mail or at meetings.
- ❑ Collect the survey through supervisors or managerial staff.
- ❑ Coordinate collection of the survey with timesheets or other documents.
- ❑ Collect the survey during meetings.

Since a low response rate constitutes a high number of non-respondents, this may increase the number of drive-alone trips a facility needs to reduce. Therefore, follow-up is important to assure the largest possible percentage of returned surveys. Employers may need to send e-mails reminding commuters to return the survey or distribute an endorsement from management that encourages commuters to return their surveys. Be sure that each commuter's survey form accounts for every day of their work week.

Your facility may want to consider the use of **incentives** such as company coffee mugs, tee shirts, and other prizes to encourage commuters to return their surveys. These incentives also work well with the coordinators or team members who may see the collection process as a competition.

Random Sample Survey Method

A survey by random sample allows your facility to survey a limited number of applicable commuters that are randomly selected to represent *all* the applicable commuters at your site(s) in order to make statistical deductions about the commute modes of all your applicable commuters. Once your facility obtains the data from the sample, you must extrapolate the data obtained from the sample to all the applicable commuters at the facility.

To help you understand how to survey by random sample, this section presents the process to determine the sample size and the sample selection process. The terms used in random sampling are explained in the *Appendix* to this document.

5 Steps to Surveying by Random Sample

There are only five steps to survey by random sample. Your facility must:

1) Determine its sample size.
2) Select its sample of commuters.
3) Distribute the survey to applicable commuters in the sample.
4) Collect the survey from the sample of commuters.
5) Extrapolate the data from the sample to all the applicable commuters at your facility, using *2005 SCD Form 4*.

1 *Determine Your Sample Size*

Use *Table 3* to identify the number of applicable commuters to survey by random sample.

To use the table, first find the total number of applicable commuters at your facility from the left-hand column. This is your population of commuters. Then look to the right for the number of applicable commuters to sample. This is your sample size. For example, if the total number of applicable commuters at your facility is 3,336, your facility must sample 788 applicable commuters.

Table 3. Determination of Minimum Applicable Commuter Sample Size.

Number of All Applicable Commuters (Population)	Minimum Number of Applicable Commuters to Sample (Sample Size)
250-299	203
300-349	235
350-399	264
400-449	291
450-499	317
500-549	341
550-599	363
600-649	385
650-699	404
700-749	423
750-799	441

Number of All Applicable Commuters (Population)	Minimum Number of Applicable Commuters to Sample (Sample Size)
800-849	458
850-899	474
900-999	489
1,000-1,499	517
1,500-1,999	624
2,000-2,499	696
2,500-2,999	748
3,000-3,499	788
3,500-3,999	818
4,000-4,499	843
4,500-4,999	863
5,000-5,999	880
6,000-6,999	906
7,000-7,999	926
8,000-8,999	942
9,000-9,999	954
10,000-14,999	965
15,000-19,999	997
20,000-24,999	1014
25,000 and over	1024

If your facility did not obtain a response from at least 90% of the applicable commuters in the sample, you will need to follow-up with the non-respondents to obtain data from them.

Another option is to survey more than the number of commuters specified in Table 3, however, do not survey your facility's entire population. Using the example above, if your facility selects a sample of 788 applicable commuters, you could survey 1,000 commuters to obtain the minimum 788 responses. Your facility must only use the data from the first 788 applicable commuters that returned the survey.

Your facility must calculate its response rate in Section C, Part 5 of the Base Report or the Update Report based on the number of applicable commuters in the sample. If your facility surveyed and obtained 1,000 responses when the sample size only required 788 responses, you would use the following numbers:

# of Applicable Commuters in Sample Responding to Survey		Total # of Applicable Commuters in Sample				Random Sample Survey Response Rate
788	÷	788	X	100	=	100%

2 *Select the Sample of Applicable Commuters*

Selecting the applicable commuters for the random sample according to the process spelled out in this section is very important for obtaining reliable commute data.

a. Arrange a list of all your applicable commuters in alphabetical order.

Gather all your commuter records together and select out your applicable commuters. Then, arrange them in alphabetical order. Keep a record of the applicable commuters in your sample.

b. Calculate your skip interval.

Your facility must calculate its skip interval to select the applicable commuters to sample from the population. The skip interval is calculated by dividing the applicable commuter population by the sample size of applicable commuters. The skip interval must be a whole number and it is recommended that you round down to the nearest whole number.

$$\frac{\text{Applicable commuter population}}{\text{Applicable commuter sample size}} = \text{Skip Interval}$$

Two examples for calculating your skip interval are given below. The sample sizes used in the examples come from Table 3. The process for selecting your sample is the same for both examples.

Example 1:
An employer with a population of 4,215 applicable commuters that is required to sample 880 applicable commuters has a skip interval of 5.0.

$$\frac{\text{4,215 applicable commuters in population}}{\text{843 applicable commuters in sample}} = \text{5.0 Skip Interval}$$

Example 2:
An employer with 3,336 applicable commuters that is required to sample 788 applicable commuters has a skip interval of 4.23.

$$\frac{\text{3,336 applicable commuters in population}}{\text{788 applicable commuters in sample}} = 4.23$$

4.23 rounded down = 4.0 Skip Interval

c. Identify a random start number to begin the selection of the sample.

Your facility must select a random number in order to begin the selection of the applicable commuter sample. Once the random number is chosen, your facility should select the applicable commuter sample using the skip interval.

To select a random number, select a number between 1 and the skip interval, inclusive. Thus, if your facility's skip interval were 5.0, you would select a random number between 1 and 5. Your facility may use a random number table or use some other random procedure to select the random number.

If the random number were 3, your facility would select the third applicable commuter name from the top of the list of applicable commuters as the first applicable commuter for

the sample. The second and subsequent applicable commuter names would be selected by adding the skip interval to the random start number.

For example:

3 (your random start #)	Pick the 3rd applicable commuter from the top of the list
3 + 5 (skip interval #)	Pick the 8th applicable commuter from the top of the list
8 + 5	Pick the 13th applicable commuter from the top of the list
13 + 5	Pick the 18th applicable commuter from the top of the list

Continue this procedure until you have selected all the applicable commuters to reach your sample size (if you choose to survey more than the sample size, continue to select your commuters until you reach your desired sample size).

d. Keep records of all applicable commuters in the sample.

Once the applicable commuters are selected, your facility should be sure to keep records of the commuters that were selected for the sample. After the survey is completed, you may have to follow up on those commuters who did not respond to the survey.

3 *Distribute the Survey*

Although the number of applicable commuters you have to sample will be significantly smaller with a random sample survey than if you conducted a census survey, your facility may still need to survey a few hundred applicable commuters. Because the number of commuters will still be significant, you will need to develop a strategy for distributing and collecting the survey from the sample of applicable commuters. Anecdotal evidence has shown that employers that achieve high response rates from commuters have developed central coordinators or teams to carry out such a strategy. Please see Step #2 in the section on the Census Survey method for more ideas on how to distribute your survey to the applicable commuters in your sample.

4 *Collect the Survey*

The steps for collecting the survey, including following-up with non-respondents, are similar to those steps recommended for a successful response rate in the Census Survey method. For details on how to collect surveys from your sample, please see Step #2 in the section on the Census Survey method.

5 *Extrapolate the Data from the Sample to the Population*

Once your facility has obtained the commute data from the sample of applicable commuters, you must extrapolate the data from the sample to the entire applicable commuter population, using the *Summary of Commute Data Form 4* in the Rideshare Program Package. This may include having to account for non-respondents if you do not obtain data from all the applicable commuters in your sample. Submit this form with your Base Report or Update Report.

Direct Count Method

In this method, your facility would use observation and analysis to identify applicable commuter commute modes. For example, facilities would count transit passes, parking passes, bicycles, and walkers to determine applicable commuter commute modes.

However, because many employers may have difficulty in obtaining comprehensive commute data over the entire commute data collection week for each applicable commuter, this method is only appropriate for certain kinds of employers:

- Employers with on-site or off-site parking lot(s) but no on-street parking (parking at a meter, for example) unless the applicable commuter vehicles can be easily distinguished from all other vehicles in these areas.
- Employers that have a means to collect data on *all* kinds of commuter commute trips, including drive-alone trips, carpool trips, vanpool public transit trips, boat/ferry trips, bicycle trips and walking trips for every day of the week.
- Employers that can distinguish applicable commuters from non-applicable commuters.

Also, your facility must provide data on applicable commuters for every day of the commute data collection week, including counting the number of applicable commuters who are off-site due to vacation, jury duty, off-site meetings and the like.

In addition to the steps discussed in the *Required Commute Data Collection Steps,* your facility must take the following steps to obtain commute data using the Direct Count method:

1a *Count the number of applicable commuter vehicles entering the parking lot.*

Your facility counts the occupants of vehicles as they enter the facility's parking lot(s) every day of the commute data collection week from 6 a.m. to 8 p.m. Count each vehicle only once during the course of the day. Make sure to count:

- Drive-alone commuters (not including visitors to the facility)
- The number of occupants in carpools
- The number of occupants in vanpools

When reporting your facility's vehicle count, do not include vehicles that remain in the parking lot(s) after 8 p.m. If there is more than one entrance to the parking lot(s), make sure you position someone at each entrance to the lot. Any applicable commuter not counted on a specific day is assumed "out-of-office" for that day. The counting of parked vehicles does not qualify as a direct count.

If you do not know who your applicable commuters are, you may want to hand out a survey to drivers (and other occupants) of the vehicles that asks them if they meet the criteria of applicable commuters.

1b *Count the number of applicable commuter vehicles registered in employer database.*

As an alternative to Step 1a, if your facility requires drive-alone commuters, carpools, and vanpools to obtain permits to park, and you can identify the applicable commuters, you may want to obtain your direct count numbers by using these records.

2 *Count the number of transit passes distributed to applicable commuters.*

Your facility needs to count the number of commuter rail, transit and bus passes that are issued to applicable commuters.

3 *Count the number of bicycles at bicycle storage racks or areas.*

Your facility needs to take several counts between the hours of 6 a.m. to 8 p.m. of the number of bicycles that are parked on bicycle racks.

4 *Count the number of walking commuters.*

Your facility needs to count commuters that walk to work as a means of commuting. To do this, you may want to register walkers, or organize a "Walk to Work" commuter awareness day.

Appendix

Background Sampling Terminology

Random sampling uses a number of statistical terms. This section briefly discusses the most important terms for employers to understand about how to survey by a random sample. MassDEP asks employers to select an applicable commuter sample using a systematic sampling approach, with a random start and constant skip interval.

1. **Population**. A population is the universe of elements, things or people under consideration in the survey. For the purpose of the Rideshare regulation, an employer's population consists of all "applicable" commuters reporting to the employment facility (or facilities, if two or more facilities are located within walking distance of each other).

2. **Skip Interval**. A skip interval is a counting method, which employers can use to select applicable commuters for the random sample. The skip interval is calculated by dividing the population by the sample size.

3. **Systematic Sampling**. Systematic sampling is a sampling technique that uses a random starting point and a constant skip interval to select the sample from the population list. For example, if the list of possible applicable commuters contains 5,000 names and an employer needs a sample of 500 applicable commuters, the employer would choose every 10th applicable commuter for the sample. To prevent any possible selection bias, the employer must choose the first commuter at random. In this case, the employer would first pick a random number between 1 and 10. Then, the employer would choose that first applicable commuter and every 10th applicable commuter thereafter.

4. **Margin of Error**. Margin of error, or precision, is the difference between the sample value and the population value. Frequently used in public opinion polls, the margin of error helps employers gauge the accuracy of the data they obtain from the random sample survey. An employer who has a margin of error of $\pm$5% for a survey, for example, must consider any survey data to be accurate within a $\pm$5% range. This means that if the survey data shows that 83% of the applicable commuters are driving alone, in reality the true range of the proportion of applicable commuters driving alone is between 78% and 88% (83% + 5% and 83% - 5%).

   In general, the larger the sample, the smaller the margin of error. The sample sizes used in Table 3 are based on a $\pm$3% margin of error. This lower margin of error will help employers to evaluate whether they have achieved any trip reductions from year to year.

5. **Reliability**. When choosing a sample, there is always the possibility of drawing a bad sample. The reliability or confidence of the sample is the risk that the margin of error may be larger than the one specified. For a random sample, this level of risk is expressed in percentages. For example, when choosing a 95% reliability for a margin of error of $\pm$5%, one would be 95% sure (or confident) that the margin of error will not exceed $\pm$5%. The higher the reliability of the sample, the higher the accuracy of the data. The sample sizes used in Table 3 are based on a 95% reliability.

Additional Commute Survey Questions

One way to ensure success using the Census Survey method or Random Sample Survey method is not only to include the questions on the *Commuter Commute Survey* form, but also to include questions regarding the commuting preferences of your commuters. Your facility will improve the effectiveness of its rideshare program by taking into consideration commuter attitudes toward commuting. Here are some examples of additional questions for your surveys that may help you develop a strategy for your facility's rideshare program:

1. What time do you usually arrive at work? _____ A.M./P.M.

2. What time do you usually leave work? _____A.M./P.M.

3. How much flexibility do you have in choosing the time you start work?

   ___ None, my employer sets the time
   ___ Up to 15 minutes
   ___ 16-30 minutes
   ___ 31-60 minutes
   ___ Up to 2 hours
   ___ More than 2 hours

4. On a typical day, with no additional stops, how long is your commute to work (one way)?

   a. Minutes _____
   b. Miles _____

5. If you drive alone to work, what are your main reasons for doing so?

   ___ Free parking is available.
   ___ I need my car for company business.
   ___ I need my car for personal business during the day.
   ___ I need my car for personal business before or after work.
   ___ I don't know anyone else who wants to carpool.
   ___ I don't want to wait or depend upon other people.
   ___ I enjoy driving alone.

6. On a scale of 1 to 5, please rate how interested you are in the following commute methods (please circle):

	Extremely Interested				Not at All Interested
Carpooling	1	2	3	4	5
Vanpooling	1	2	3	4	5
Public Transit	1	2	3	4	5
Bicycling	1	2	3	4	5
Walking	1	2	3	4	5

7. Please rank in order, with (1) being the most important, the incentives that might influence you to consider carpooling or vanpooling:

___ Preferential parking for carpools
___ Free parking for carpools
___ A ride home in case of emergencies
___ A cash incentive to carpoolers
___ A carpool matching service
___ On-site services such as dry cleaning and food delivery
___ Other_____

8. If bicycling to work interests you, which of the following incentives would encourage you to take this commuting alternative?

___ Bicycling to work does not interest me
___ A cash incentive program
___ Showers and lockers
___ Bicycle racks
___ Other_____

9. If taking transit to work interests you, which of the following might influence you to take public transit to work?

___ Taking transit to work does not interest me
___ Transit passes sold at work
___ Availability of scheduling and route information
___ Flexible work hours to accommodate transit schedule
___ Company shuttle bus to and from transit stop
___ Monthly public transit subsidies
___ Decrease in available parking for drive-alone commuters
___ Other_____

10. If walking (or running) to work interests you, which of the following incentives would encourage you to take this commuting alternative?

___ Walking to work does not interest me
___ A cash incentive program
___ Designated walking path
___ Other people to walk with
___ Showers and lockers to store my clothes
___ Other_____

A Comparison of the Commute Data Collection Methods

Method	What It Is	Suitable For	Advantages	Disadvantages
Census Survey	Employers survey *all* applicable commuters at facility to obtain commute data.	Employers with 250 to 999 commuters[1]	♦ Identification of which commuters to survey is straightforward; employers do not have to select commuters according to specific procedure, as is required in random sample survey method	♦ Requires developing potentially complex survey distribution and collection system in order to obtain commute data on <u>all</u> applicable commuters ♦ May require extensive follow-up with commuters since response to survey may be low ♦ May result in more commuters that do not respond to survey (non-respondents), which may increase the calculated number of drive-alone commuters
Random Sample Survey	Employers survey limited number of applicable commuters (the "sample") that are *randomly* selected to represent entire applicable commuter population. After survey is completed, employers extrapolate commute data from applicable commuter sample to total applicable commuter population.	Employers with 1000+ employees and educational facilities with 1000+ employees and students[1]	♦ Saves time because employers only required to survey relatively small number of commuters ♦ Less expensive to conduct because employers sample fewer commuters ♦ Produces higher survey response rate in general because employers only have to sample relatively small number of commuters	♦ It may be difficult to identify applicable commuters that would serve as the list from which to select the sample
Direct Count	Employers count applicable commuter vehicles and review records pertaining to commute modes of *all* applicable commuters, including transit passes, carpool passes, preferential parking, drive-alone parking, and vanpool use, to obtain commute trip data.	Employers who have *comprehensive* records of applicable commuters' use of various transportation modes, and/or a designated place for *all* commuters to park[1]	♦ May eliminate need to develop survey distribution and collection system, as required in census survey and random sample survey methods	♦ Less accurate because counting vehicles as they enter parking lots may not identify whether commuter is applicable commuter ♦ Requires counting transit passes, bicycles, and all other commute modes for all applicable commuters ♦ May be difficult to track several days of commute data

[1] An employer may use any of the three survey methods depending upon the individual needs of the facility.